

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

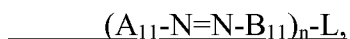
LISTING OF CLAIMS:

1. (currently presented): An ink for ink jet comprising:
a water-soluble dye having an anionic dissociable group;
at least one of water and a water-soluble organic solvent; and
at least one kind of cationic polymer capable of forming an ion pair with the anionic

dissociable group,-

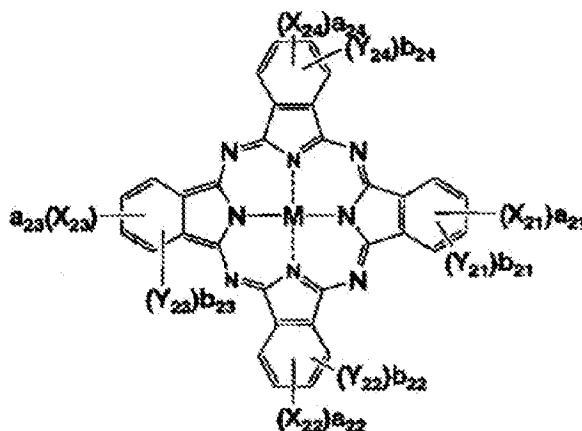
wherein the water-soluble dye comprises at least one of compounds represented by general formulas (1) to (4-A):

general formula (1):



wherein, A₁₁ and B₁₁ each independently represents a heterocyclic group that may be substituted; n represents 1 or 2; L represents a substituent bonded in an arbitrary position with one of A₁₁ and B₁₁, and represents a hydrogen atom in case n = 1, a single bond or a divalent connecting group in case n = 2;

general formula (2):



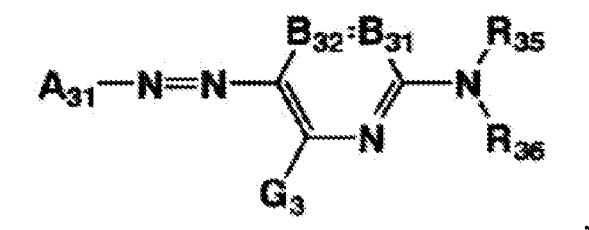
wherein, X_{21} , X_{22} , X_{23} and X_{24} each independently represents $-\text{SO}-Z_2$, $-\text{SO}_2-Z_2$, $-\text{SO}_2\text{NR}_{21}\text{R}_{22}$, a sulfo group, $-\text{CONR}_{21}\text{R}_{22}$, or $-\text{COOR}_{21}$; Z_2 each independently represents a substituted or non-substituted alkyl group, a substituted or non-substituted cycloalkyl group, a substituted or non-substituted alkenyl group, a substituted or non-substituted aralkyl group, a substituted or non-substituted aryl group or a substituted or non-substituted heterocyclic group; and R_{21} and R_{22} each independently represents a hydrogen atom, a substituted or non-substituted alkyl group, a substituted or non-substituted cycloalkyl group, a substituted or non-substituted alkenyl group, a substituted or non-substituted aralkyl group, a substituted or non-substituted aryl group or a substituted or non-substituted heterocyclic group;

Y_{21} , Y_{22} , Y_{23} and Y_{24} each independently represents a monovalent substituent;

a_{21} to a_{24} and b_{21} to b_{24} represent numbers of substituents respectively on X_{21} to X_{24} and Y_{21} to Y_{24} ; a_{21} to a_{24} each independently represents a number of 0 to 4, and at least one of a_{21} to a_{24} is not zero; b_{21} to b_{24} each independently represents a number of 0 to 4; and, in case any of a_{21} to a_{24} and b_{21} to b_{24} represents a number equal to or larger than 2, plural ones in X_{21} to X_{24} and Y_{21} to Y_{24} may be mutually same or different;

M represents a hydrogen atom, a metal atom, an oxide of the metal atom, a hydroxide of the metal atom, or a halide of the metal atom;

general formula (3):



wherein, A₃₁ represents a 5-membered heterocyclic ring;

B₃₁ and B₃₂ each represents =CR₃₁- or -CR₃₂=, or either one represents a nitrogen atom while the other one represents =CR₃₁- or -CR₃₂=;

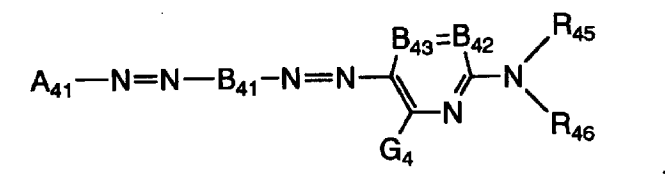
R₃₅ and R₃₆ each independently represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxy carbonyl group, a carbamoyl group, an alkyl- or arylsulfonyl group, or a sulfamoyl group, each of which may further have a substituent;

G₃, R₃₁ and R₃₂ each independently represent a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, a carboxyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxy carbonyl group, a heterocyclic oxycarbonyl group, an acyl group, a hydroxyl group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, a silyloxy group, an acyloxy group, a carbamoyloxy group, an alkoxycarbonyloxy group, an aryloxy carbonyloxy group, an amino group (including an arylamino group and a heterocyclic amino group), an acylamino group, an ureido group, a sulfamoylamino group, an alkoxycarbonylamino group, an aryloxy carbonylamino group, an alkyl- or aryl sulfonylamino group, a heterocyclic sulfonylamino group, a nitro group, an alkyl-

or arylthio group, an alkyl- or arylsulfonyl group, a heterocyclic sulfonyl group, an alkyl- or arylsulfinyl group, a heterocyclic sulfinyl group, a sulfamoyl group, a sulfo group or a heterocyclic thio group, each of which may be further substituted;

R₃₁ and R₃₅, or R₃₅ and R₃₆ may be bonded to form a 5- or 6-membered ring; and

general formula (4-A):



wherein, A₄₁ and B₄₁ each independently represents an aromatic group or a heterocyclic group, each of which may be further substituted;

B₄₂ and B₄₃ each represents =CR₄₁- or -CR₄₂=, or either one represents a nitrogen atom while the other one represents =CR₄₁- or -CR₄₂=;

G₄, R₄₁ and R₄₂ each independently represent a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, a carboxyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a heterocyclic oxycarbonyl group, an acyl group, a hydroxyl group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, a silyloxy group, an acyloxy group, a carbamoyloxy group, an alkoxycarbonyloxy group, an aryloxycarbonyloxy group, an amino group (including an alkylamino group, an arylamino group and a heterocyclic amino group), an acylamino group, an ureido group, a sulfamoylamino group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, an alkyl- or aryl-sulfonylamino group, a heterocyclic sulfonylamino group, a nitro group, an alkyl- or aryl-thio group, a heterocyclic thio group, an alkyl- or aryl-sulfonyl group, a heterocyclic sulfonyl group, an alkyl- or aryl-sulfinyl group, a

heterocyclic sulfinyl group, a sulfamoyl group, or a sulfo group, each of which may be further substituted; and

R₄₅ and R₄₆ each independently represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxy carbonyl group, a carbamoyl group, an alkyl- or aryl-sulfonyl group, or a sulfamoyl group, which may further have a substituent; wherein R₄₅ and R₄₆ do not represent hydrogen atoms simultaneously, wherein R₄₁ and R₄₅, or R₄₅ and R₄₆ may be bonded to form a 5- or 6-membered ring; and

wherein each of the compounds represented by general formulas (1), (2), (3), and (4-A) comprises any one of a sulfo group, a carboxyl group, and a phosphono group in the molecule.

2. (original): An ink for ink jet according to claim 1, wherein the cationic polymer is a water-soluble polymer.

3. (currently amended): A method for producing an ink for ink jet, the method comprising:

mixing in advance: a water-soluble dye having an anionic dissociable group; and at least one cationic polymer capable of forming an ion pair with the anionic dissociable group, in water, to form a resulting salt; and

preparing the ink after desalting the resulting salt,

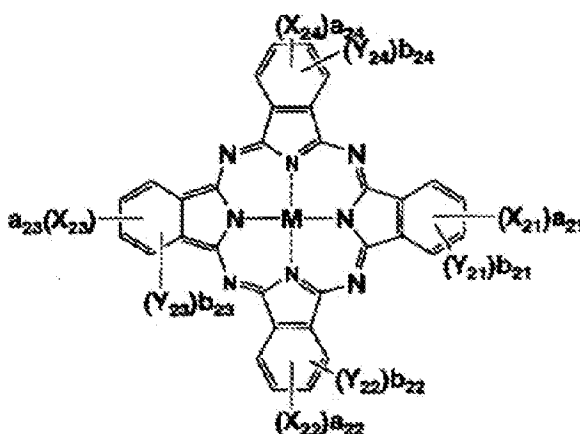
wherein the water-soluble dye comprises at least one of compounds represented by general formulas (1) to (4-A):

general formula (1):



wherein, A_{11} and B_{11} each independently represents a heterocyclic group that may be substituted; n represents 1 or 2; L represents a substituent bonded in an arbitrary position with one of A_{11} and B_{11} , and represents a hydrogen atom in case $n = 1$, a single bond or a divalent connecting group in case $n = 2$;

general formula (2):



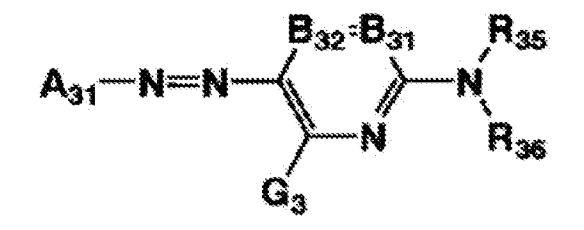
wherein, X_{21} , X_{22} , X_{23} and X_{24} each independently represents $-SO-Z_2$, $-SO_2-Z_2$, $-SO_2NR_{21}R_{22}$, a sulfo group, $-CONR_{21}R_{22}$, or $-COOR_{21}$; Z_2 each independently represents a substituted or non-substituted alkyl group, a substituted or non-substituted cycloalkyl group, a substituted or non-substituted alkenyl group, a substituted or non-substituted aralkyl group, a substituted or non-substituted aryl group or a substituted or non-substituted heterocyclic group; and R_{21} and R_{22} each independently represents a hydrogen atom, a substituted or non-substituted alkyl group, a substituted or non-substituted cycloalkyl group, a substituted or non-substituted alkenyl group, a substituted or non-substituted aralkyl group, a substituted or non-substituted aryl group or a substituted or non-substituted heterocyclic group;

Y_{21} , Y_{22} , Y_{23} and Y_{24} each independently represents a monovalent substituent;

a₂₁ to a₂₄ and b₂₁ to b₂₄ represent numbers of substituents respectively on X₂₁ to X₂₄ and Y₂₁ to Y₂₄; a₂₁ to a₂₄ each independently represents a number of 0 to 4, and at least one of a₂₁ to a₂₄ is not zero; b₂₁ to b₂₄ each independently represents a number of 0 to 4; and, in case any of a₂₁ to a₂₄ and b₂₁ to b₂₄ represents a number equal to or larger than 2, plural ones in X₂₁ to X₂₄ and Y₂₁ to Y₂₄ may be mutually same or different; and

M represents a hydrogen atom, a metal atom, an oxide of the metal atom, a hydroxide of the metal atom, or a halide of the metal atom;

general formula (3):



wherein, A₃₁ represents a 5-membered heterocyclic ring;

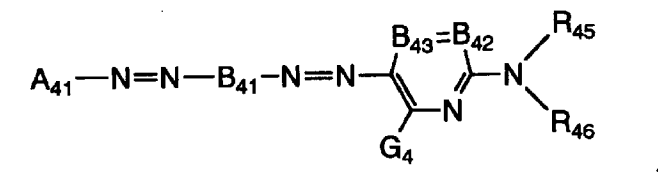
B₃₁ and B₃₂ each represents =CR₃₁- or -CR₃₂=, or either one represents a nitrogen atom while the other one represents =CR₃₁- or -CR₃₂=;

R₃₅ and R₃₆ each independently represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkyl- or arylsulfonyl group, or a sulfamoyl group, each of which may further have a substituent;

G₃, R₃₁ and R₃₂ each independently represent a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, a carboxyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a heterocyclic oxycarbonyl group, an acyl group, a hydroxyl group, an alkoxy group, an aryloxy group, a

heterocyclic oxy group, a silyloxy group, an acyloxy group, a carbamoyloxy group, an alkoxy carbonyloxy group, an aryloxy carbonyloxy group, an amino group (including an arylamino group and a heterocyclic amino group), an acylamino group, an ureido group, a sulfamoylamino group, an alkoxy carbonylamino group, an aryloxy carbonylamino group, an alkyl- or aryl sulfonylamino group, a heterocyclic sulfonylamino group, a nitro group, an alkyl- or arylthio group, an alkyl- or arylsulfonyl group, a heterocyclic sulfonyl group, an alkyl- or arylsulfinyl group, a heterocyclic sulfinyl group, a sulfamoyl group, a sulfo group or a heterocyclic thio group, each of which may be further substituted;

R₃₁ and R₃₅, or R₃₅ and R₃₆ may be bonded to form a 5- or 6-membered ring; and
general formula (4-A):



wherein, A₄₁ and B₄₁ each independently represents an aromatic group or a heterocyclic group, each of which may be further substituted;

B₄₂ and B₄₃ each represents =CR₄₁- or -CR₄₂=, or either one represents a nitrogen atom while the other one represents =CR₄₁- or -CR₄₂=;

G₄, R₄₁ and R₄₂ each independently represent a hydrogen atom, a halogen atom, an aliphatic group, an aromatic group, a heterocyclic group, a cyano group, a carboxyl group, a carbamoyl group, an alkoxy carbonyl group, an aryloxy carbonyl group, a heterocyclic oxy carbonyl group, an acyl group, a hydroxyl group, an alkoxy group, an aryloxy group, a heterocyclic oxy group, a silyloxy group, an acyloxy group, a carbamoyloxy group, an alkoxy carbonyloxy group, an aryloxy carbonyloxy group, an amino group (including an

alkylamino group, an arylamino group and a heterocyclic amino group), an acylamino group, an ureido group, a sulfamoylamino group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, an alkyl- or aryl-sulfonylamino group, a heterocyclic sulfonylamino group, a nitro group, an alkyl- or aryl-thio group, a heterocyclic thio group, an alkyl- or aryl-sulfonyl group, a heterocyclic sulfonyl group, an alkyl- or aryl-sulfinyl group, a heterocyclic sulfinyl group, a sulfamoyl group, or a sulfo group, each of which may be further substituted; and

R₄₅ and R₄₆ each independently represents a hydrogen atom, an aliphatic group, an aromatic group, a heterocyclic group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a carbamoyl group, an alkyl- or aryl-sulfonyl group, or a sulfamoyl group, which may further have a substituent, wherein R₄₅ and R₄₆ do not represent hydrogen atoms simultaneously, wherein R₄₁ and R₄₅, or R₄₅ and R₄₆ may be bonded to form a 5- or 6-membered ring; and

wherein each of the compounds represented by general formulas (1), (2), (3), and (4-A) comprises any one of a sulfo group, a carboxyl group and a phosphono group in the molecule.

4. (previously presented): An ink for ink jet according to claim 1, wherein the ink is provided by:

mixing in advance: said at least one kind of cationic polymer; and the water-soluble dye having the anionic dissociable group, in water, to form a resulting salt; and preparing the ink after desalting the resulting salt.

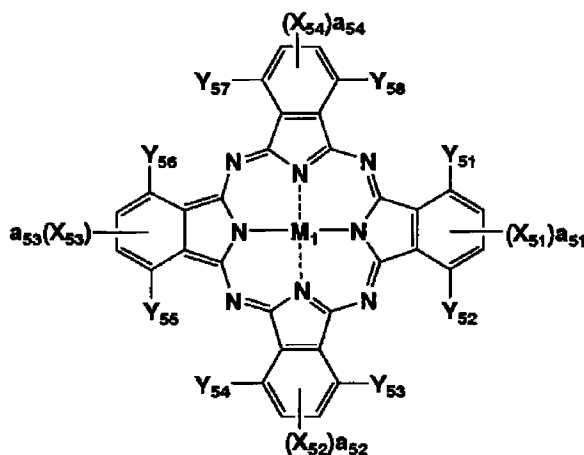
5. (previously presented): An ink for ink jet according to claim 1,

wherein said at least one kind of cationic polymer has a cation derived from a nitrogen atom.

6. (canceled)

7. (previously presented): An ink for ink jet according to claim 1, wherein the dye represented by the general formula (2) is a dye represented by general formula (5):

general formula (5):



in the general formula (5), X_{51} to X_{54} , Y_{51} to Y_{58} and M_1 respectively have same meanings as X_{21} to X_{24} , Y_{21} to Y_{24} and M in the general formula (2); and a_{41} to a_{54} each independently represents an integer 1 or 2.

8. (previously presented): An ink set for ink jet comprising an ink according to claim 1.

9. (currently amended): An ink jet recording method comprising executing an image recording on one of a plain paper and an ink jet exclusive paper with an ink jet printer by using at least one of: an ink according to claim 1; and an ink set adapted for ink jet recording wherein the ink set comprises the ink according to claim 1~~according to claim 8~~.

10. (previously presented): An ink jet recording method comprising executing an image recording on one of a plain paper and an ink jet exclusive paper with an ink jet printer by using an ink set for ink jet according to claim 8.